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EXAMINER	
MISLEH, JUSTIN P	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 09/400,549	**Applicant(s)** NODA, HIROSHI	
	Examiner Justin P Misleh	**Art Unit** 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 18* is/are rejected.

7)☒ Claim(s) *7 - 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 September 1999* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 5.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: no detailed description for figures 4 and 5. Figures 4 and 5 are briefly described on page 9; however, the detailed description of figures 4 and 5 has not been included in the specification.

Appropriate correction is required.

2. The disclosure is objected to because of the following informalities: typographical errors.

- On page 10 (lines 20 and 19), the Applicant states, "area sensors 31"; however, on page 11 (line 16), the Applicant states, "area sensors 71". Furthermore, the Applicant has also assigned reference sign 31 to the "line sensors" of figure 7B, as stated on page 10 (line 17). This error is also reflected in figure 8.
- On page 19 (lines 10 – 12), the Applicant states, "CPU 32a (central processing unit), a ROM 32b, a RAM 32c, an EEPROM 32d, an A/D converter 32e and a timer TM 32f." However, figure 8 shows CPU 32a, a ROM 32c, a RAM 32d, an EEPROM 32e, an A/D converter 32f and a timer TM 32g.
- On page 22 (lines 9 and 10), the Applicant states, "If the switch SW1 is off at Step (001), the flow advances to Step (003)"; however, flow advances to Step (003) is the switch SW1 is on at Step (001).
- On page 27 (line 11), the Applicant introduces Step (900) without giving any indication as to the figure Step (900) is shown in. The Examiner finally learns of the figure on page 29 (line 23).

- On page 29 (line 12), "sleeve" should be corrected to "sleep".

  Appropriate correction is required.

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

4. Figures 1, 2, 3, 7A, 7B, and 7C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. Figure 8 is objected to as failing to comply with 37 CFR 1.84(p)(5) because it includes a significant number of reference signs that are not mentioned in the description. More specifically, only the following reference signs are mentioned in the description: 31, SNS-1a, SNS-1b, SNS-2a, SNS-2b, SO, SI, SCLK, CLCM, CSDR, CDDR, /TINTE, VIDEO, PRS, 32a, 32c, 32d, 32e, 32f, SW1, SW2, and SWS. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "31" has been used to designate both the area sensors of figure 6B and the line sensors of figure 7B. A proposed drawing correction or corrected drawings are required in

reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 005 (figure 14) and 006 (figure 14). A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

8. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: distance measurement point 1 (page 21, line 6). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

9. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "807" and "900" have both been used to designate *Sleep For Waiting Completion of Accumulation*. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

10. **Claims 7 – 10** are objected to because of the following informalities: antecedent basis issue.

In Claim 7, the Applicant states, "storage means for storing noise information of the pixel independent from the accumulation time and noise information of the pixel dependent ...". However, previously, in Claim 7, the Applicant stated, "a plurality of pixels". The claim language makes a direct transition between "a plurality of pixels" and "the pixel", which presents an antecedent basis issue. For the purposes of examination, the Examiner will interpret "the pixel" claim language, as "the pixels". The issue is also present in Claims 8 – 10.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. **Claims 1 – 9 and 13 – 18** are rejected under 35 U.S.C. 102(e) as being anticipated by Sakai et al.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

For the following rejections, please refer to figures 1 and 2 and columns 4 (lines 29 – 67) and 5 (lines 1 – 49). Furthermore, the electronic camera of Sakai et al., as shown in figures 1 and 2, operates according to the control of the camera control circuit (10). Although, Sakai et al. is silent with respect to the details of the camera control circuit (10), the disclosed electronic camera is a digital electronic camera wherein the camera control circuit (10) provides instructions to govern the camera, as stated in column 4 (lines 27 and 28); hence, it is inherent that the camera control circuit (10) is a processor driven circuit that operates according to a program stored in a storage medium.

13. For **Claim 1**, Sakai et al. disclose an image processing apparatus comprising:

a photoelectric conversion unit including a pixel (solid-state image pickup element 3); and

noise correction means for correcting noises in a signal output from a pixel (see below for further explanation), in accordance with noise information obtained from the pixel during two or more arbitrary different accumulation times (see below for further explanation).

Sakai et al. disclose that once a user provides a release instruction, the camera control circuit (10) controls the lens (1), shutter (2), and solid-state image pickup element (3) to take a subject image. Data read from the solid-state image pickup element (3) is converted into digital data by the A/D converter (4) wherein the digital image data is stored in a memory (8).

Furthermore, Sakai et al. disclose that the process is repeated when the shutter (2) is closed wherein an output of the solid-state image pickup element (3) is A/D converted (4) and is downshifted to the lower digit by an arbitrary number of bits (set by the camera control circuit 10) and it inverted to an opposite sign. The resulting data is added (subtracted due to the sign

inversion) to an output of the memory (8) and stored back into the memory (8). In other words, the output of the memory (8) is subtracted by the shifted data. The data captured while the shutter is closed is noise data. The image data first stored in the memory (8) is subtracted by the average of noise data picked up a plurality of times therefore reducing fixed pattern noises without increased random noises.

Regarding the claim language, Sakai et al. disclose that the accumulation time of the solid-state image pickup (3) can either be long or short and dependent upon the operation mode of the camera, as stated in columns 4 (lines 61 – 67) and 5 (lines 1 – 4). Thus, in Sakai et al. the accumulation times of the plurality of captured data required for noise correction is arbitrary and different and at least two accumulation times are present; the bare minimum required for an average.

In addition, regarding the claim language, the digital electronic camera of Sakai et al. is disclosed at the frame level. In other words, noise data captured in solid-state image pickup element (3) during a closed shutter is captured as a whole frame and, likewise, image data captured in the solid-state image pickup element (3) during an open shutter is captured as a whole frame. Thus, since the noise data is averaged among a plurality of noise frames and is subtracted from a frame of image data, Sakai et al. is applicable at the pixel level as required in the claim language.

14. As for **Claim 2**, Sakai et al. disclose an image processing apparatus according to Claim 1, wherein said photoelectric conversion unit includes a plurality of pixels (solid-state image pickup element 3).

15. As for **Claim 3**, Sakai et al. disclose an image processing apparatus according to Claim 1, further comprising storage means (memories 81 and 82) for storing the noise information.

16. As for **Claim 4**, while Sakai et al. do not disclose the physical details of the components of the image processing apparatus, it is inherent that the components are comprised of circuits to operate the camera. More specifically, while Sakai et al. disclose an accumulation time for the photoelectric conversion device, Sakai et al. is silent with regards to a counter or some other means for counting the accumulation time of the photoelectric conversion unit. However; it is inherent to Sakai et al. to have a counter, clocking means, or some other means to count the accumulation time of the photoelectric conversion unit, otherwise, it would be impossible for Sakai et al. to disclose an image capturing process, much less an accumulation time for the unit.

17. As for **Claim 5**, Sakai et al. disclose an image processing apparatus according to Claim 1, wherein said noise correction means includes calculation means for calculating noise information dependent upon the accumulation time (see below for further information) and noise information independent from the accumulation time (see below for further information), in accordance with the noise information of the pixel obtained during two or more arbitrary different accumulation times.

The Examiner interprets the claim language in the following manner, the calculation of noise information wherein that calculation is both dependent upon the accumulation time and independent of the accumulation time. Sakai et al. disclose the calculation of noise information using the summing circuits (7 and 71), the memories (8, 81, and 82), the N-bit shift circuit (5), and the sign inversion circuit (6). Furthermore, Sakai et al. disclose the calculation of noise information that satisfies the requirements as interpreted by the Examiner. The calculation of

noise information, in Sakai et al., is dependent upon accumulation time in the respect that the noise data captured by the solid-state image pickup element (3) is captured according to the operation mode of the camera and can either be long or short, as set forth in the above rejections. The calculation of noise information, in Sakai et al., is independent from accumulation time in the respect that the noise data captured by the solid-state image pickup element (3) is calculated into noise information by downshifting to the lower digits by an arbitrary number of bits (set by the camera control circuit 10) and it inverted to an opposite sign, also as set forth in the above rejections. Furthermore, the output of the memory (8), or rather the image data, is subtracted by the noise data.

18. As for **Claim 6**, Sakai et al. disclose an image processing apparatus according to Claim 5, wherein said noise correction means calculates the difference (summing circuit 7) between a noise signal dependent upon the accumulation time in the signal output from the pixel and noise signal independent from the accumulation in the signal from the pixel.

19. For **Claim 7** (please see objection above), Sakai et al. disclose an image processing apparatus comprising:

a photoelectric conversion unit including a plurality of pixels (solid-state image pickup element 3);

storage means (memories 81 and 82) for storing noise information of the <u>pixels</u> [pixel] independent from an accumulation time (see below for further explanation) and noise information of the <u>pixels</u> [pixel] dependent upon the accumulation time (see below for further explanation); and

noise correction means (summing circuit 7) of correcting noises in a signal output from said photoelectric conversion unit (solid-state image pickup element 3) in accordance with noise information stored in said storage means (memories 81 and 82).

Sakai et al. disclose that once a user provides a release instruction, the camera control circuit (10) controls the lens (1), shutter (2), and solid-state image pickup element (3) to take a subject image. Data read from the solid-state image pickup element (3) is converted into digital data by the A/D converter (4) wherein the digital image data is stored in a memory (8).

Furthermore, Sakai et al. disclose that the process is repeated when the shutter (2) is closed wherein an output of the solid-state image pickup element (3) is A/D converted (4) and is downshifted to the lower digit by an arbitrary number of bits (set by the camera control circuit 10) and it inverted to an opposite sign. The resulting data is stored in another memory (81 and 82) and eventually added (subtracted due to the sign inversion) to an output of the memory (8). In other words, the output of the memory (8) is subtracted by the shifted data. The data captured while the shutter is closed is noise data. The image data first stored in the memory (8) is subtracted by the average of noise data picked up a plurality of times added together and stored in memories (81 and 82); therefore, reducing fixed pattern noises without increased random noises.

Lastly, Sakai et al. disclose that the accumulation time of the solid-state image pickup (3) can either be long or short and dependent upon the operation mode of the camera, as stated in columns 4 (lines 61 – 67) and 5 (lines 1 – 4). Thus, in Sakai et al. the accumulation times of the plurality of captured data required for noise correction is arbitrary and different and at least two accumulation times are present; the bare minimum required for an average.

The Examiner interprets the claim language in the following manner; storage means for storing noise information wherein the storing of pixels is both dependent upon the accumulation time and independent of the accumulation time. Sakai et al. disclose the storing of noise information using the memories (81 and 82). Furthermore, Sakai et al. disclose the storing of noise information that satisfies the requirements as interpreted by the Examiner. The storing of noise information, in Sakai et al., is dependent upon accumulation time in the respect that the noise data captured by the solid-state image pickup element (3) is captured according to the operation mode of the camera and can either be long or short, as set forth in the above rejections. The storing of noise information, in Sakai et al., is independent from accumulation time in the respect that the noise data captured by the solid-state image pickup element (3) is calculated into noise information by downshifting to the lower digits by an arbitrary number of bits (set by the camera control circuit 10) and it inverted to an opposite sign prior to storage, also as set forth in the above rejections.

20. As for **Claim 8** (please see objection above), while Sakai et al. do not disclose the physical details of the components of the image processing apparatus, it is inherent that the components are comprised of circuits to operate the camera. More specifically, while Sakai et al. disclose an accumulation time for the photoelectric conversion device, Sakai et al. is silent with regards to a counter or some other means for counting the accumulation time of the <u>pixels</u> [pixel]. However; it is inherent to Sakai et al. to have a counter, clocking means, or some other means to count the accumulation time of the pixels, otherwise, it would be impossible for Sakai et al. to disclose an image capturing process, much less an accumulation time for the pixels.

21. As for **Claim 9** (please see objection above), Sakai et al. disclose wherein the noise correction means calculates a difference (summing 7) between a noise signal dependent upon the accumulation time in the signal output from the pixels [pixel] (see the Examiner's interpretation above) and noise information independent from the accumulation time in the signal output from the pixels [pixel] (see the Examiner's interpretation above).

22. For **Claims 13, 15, and 17**, Sakai et al. disclose a noise correction apparatus comprising noise correction means, a noise correction method comprising the step of, and a storage medium storing a program comprising the step of:

correcting noises from a signal output from a pixel (see below for further explanation) in a photoelectric conversion unit (solid-state image pickup element 3), in accordance with noise information of the pixel obtained during two or more arbitrary different accumulation times (see below for further explanation).

Sakai et al. disclose that once a user provides a release instruction, the camera control circuit (10) controls the lens (1), shutter (2), and solid-state image pickup element (3) to take a subject image. Data read from the solid-state image pickup element (3) is converted into digital data by the A/D converter (4) wherein the digital image data is stored in a memory (8).

Furthermore, Sakai et al. disclose that the process is repeated when the shutter (2) is closed wherein an output of the solid-state image pickup element (3) is A/D converted (4) and is downshifted to the lower digit by an arbitrary number of bits (set by the camera control circuit 10) and it inverted to an opposite sign. The resulting data is added (subtracted due to the sign inversion) to an output of the memory (8) and stored back into the memory (8). In other words, the output of the memory (8) is subtracted by the shifted data. The data captured while the

shutter is closed is noise data. The image data first stored in the memory (8) is subtracted by the average of noise data picked up a plurality of times therefore reducing fixed pattern noises without increased random noises.

Regarding the claim language, Sakai et al. disclose that the accumulation time of the solid-state image pickup (3) can either be long or short and dependent upon the operation mode of the camera, as stated in columns 4 (lines 61 – 67) and 5 (lines 1 – 4). Thus, in Sakai et al. the accumulation times of the plurality of captured data required for noise correction is arbitrary and different and at least two accumulation times are present; the bare minimum required for an average.

In addition, regarding the claim language, the digital electronic camera of Sakai et al. is disclosed at the frame level. In other words, noise data captured in solid-state image pickup element (3) during a closed shutter is captured as a whole frame and, likewise, image data captured in the solid-state image pickup element (3) during an open shutter is captured as a whole frame. Thus, since the noise data is averaged among a plurality of noise frames and is subtracted from a frame of image data, Sakai et al. is applicable at the pixel level as required in the claim language.

23. As for **Claim 14, 16, and 18**, Sakai et al. disclose a noise correction apparatus according to Claim 13, a noise correction method according to Claim 14, and a storage medium storing a program according to Claim 17, respectively, further comprising calculation means for calculating noise information dependent upon the accumulation time (see below for further information) and noise information independent from the accumulation time (see below for further information), in accordance with the noise information of the pixel obtained during two

or more arbitrary different accumulation times; and means for calculating the difference between a noise signal dependent upon the accumulation time in the signal output from the pixel and noise signal independent from the accumulation in the signal from the pixel.

The Examiner interprets the claim language in the following manner, the calculation of noise information wherein that calculation is both dependent upon the accumulation time and independent of the accumulation time. Sakai et al. disclose the calculation of noise information using the summing circuits (7 and 71), the memories (8, 81, and 82), the N-bit shift circuit (5), and the sign inversion circuit (6). Furthermore, Sakai et al. disclose the calculation of noise information that satisfies the requirements as interpreted by the Examiner. The calculation of noise information, in Sakai et al., is dependent upon accumulation time in the respect that the noise data captured by the solid-state image pickup element (3) is captured according to the operation mode of the camera and can either be long or short, as set forth in the above rejections. The calculation of noise information, in Sakai et al., is independent from accumulation time in the respect that the noise data captured by the solid-state image pickup element (3) is calculated into noise information by downshifting to the lower digits by an arbitrary number of bits (set by the camera control circuit 10) and it inverted to an opposite sign, also as set forth in the above rejections. Furthermore, the output of the memory (8), or rather the image data, is subtracted by the noise data.

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

25. **Claims 10 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai et al. in view of Kiri et al.

26. For **Claim 10** (please see objection above), the preamble recites, "An automatic focus detecting apparatus comprising". As stated in the MPEP § 2111.02 (please see also Kropa v. Robie, 187 F.2d 150, 152, 88 USPQ 478, 481 – CCPA 1951), if the preamble of the claim neither recites the limitations of the claim nor is necessary to give life, meaning, and vitality to the claim; then the preamble of the claim is not served to further define the structure of the claim. Thus, in regards to Claim 10, the preamble of the claim is not given any patentable weight since the preamble of the claim neither recites the limitations of the claim nor is necessary to give life, meaning, and vitality to the claim.

Regarding the body of the claim, Sakai et al. disclose an image processing apparatus comprising:

a photoelectric conversion unit including a plurality of pixels (solid-state image pickup element 3); and

noise correction means for correcting noises in a signal output from the pixels [pixel] (see below for further explanation) in accordance with noise information of the pixels [pixel] during two or more arbitrary different accumulation times (see below for further explanation).

Sakai et al. disclose that once a user provides a release instruction, the camera control circuit (10) controls the lens (1), shutter (2), and solid-state image pickup element (3) to take a

subject image. Data read from the solid-state image pickup element (3) is converted into digital data by the A/D converter (4) wherein the digital image data is stored in a memory (8).

Furthermore, Sakai et al. disclose that the process is repeated when the shutter (2) is closed wherein an output of the solid-state image pickup element (3) is A/D converted (4) and is downshifted to the lower digit by an arbitrary number of bits (set by the camera control circuit 10) and it inverted to an opposite sign. The resulting data is added (subtracted due to the sign inversion) to an output of the memory (8) and stored back into the memory (8). In other words, the output of the memory (8) is subtracted by the shifted data. The data captured while the shutter is closed is noise data. The image data first stored in the memory (8) is subtracted by the average of noise data picked up a plurality of times therefore reducing fixed pattern noises without increased random noises.

Sakai et al. disclose that the accumulation time of the solid-state image pickup (3) can either be long or short and dependent upon the operation mode of the camera, as stated in columns 4 (lines 61 – 67) and 5 (lines 1 – 4). Thus, in Sakai et al. the accumulation times of the plurality of captured data required for noise correction is arbitrary and different and at least two accumulation times are present; the bare minimum required for an average.

In addition, the digital electronic camera of Sakai et al. is disclosed at the frame level. In other words, noise data captured in solid-state image pickup element (3) during a closed shutter is captured as a whole frame and, likewise, image data captured in the solid-state image pickup element (3) during an open shutter is captured as a whole frame. Thus, since the noise data is averaged among a plurality of noise frames and is subtracted from a frame of image data, Sakai et al. is applicable at the pixel level as required in the claim language.

However, Sakai et al. do not disclose a distance measurement calculation means for performing a distance measurement calculation in accordance with a signal corrected by said noise correction means. On the other hand, Kiri et al. also disclose a digital electronic camera including an image processing apparatus. As shown in figure 2, the image processing apparatus of Kiri et al. includes an automatic focusing apparatus (30) with a distance measurement calculation means (34) for performing a distance measurement calculation. As stated in column 1 (lines 66 and 67) and 2 (lines 1 – 3), at the time the invention was made, one with ordinary skill in the art would have been motivated to include the distance measurement calculation means (34) for performing a distance measurement calculation, as taught by Kiri et al., in accordance with a signal corrected by the noise correction means, of Sakai et al., so as to "provide an object detection mechanism in an imaging device with automatic focusing wherein the mechanism is capable of reliably detecting an object to be focused with a simple structure." Therefore, at the time the invention was made, it would have been obvious to one with ordinary skill in the art include the distance measurement calculation means (34) for performing a distance measurement calculation, as taught by Kiri et al., in accordance with a signal corrected by the noise correction means, of Sakai et al.

27. For **Claim 11**, the preamble recites, "An automatic focus detecting apparatus comprising". As stated in the MPEP § 2111.02 (please see also Kropa v. Robie, 187 F.2d 150, 152, 88 USPQ 478, 481 – CCPA 1951), if the preamble of the claim neither recites the limitations of the claim nor is necessary to give life, meaning, and vitality to the claim; then the preamble of the claim is not served to further define the structure of the claim. Thus, in regards to Claim 11, the preamble of the claim is not given any patentable weight since the preamble of

the claim neither recites the limitations of the claim nor is necessary to give life, meaning, and vitality to the claim.

Regarding the body of the claim, Sakai et al. disclose an image processing apparatus comprising:

a photoelectric conversion unit including a plurality of pixels (solid-state image pickup element 3);

storage means (memories 81 and 82) for storing noise information of a pixel independent from an accumulation time (see below for further explanation) and noise information of a dependent upon the accumulation time (see below for further explanation); and

noise correction means for correcting noises in a signal output from said photoelectric conversion unit (see below for further explanation) in accordance with the respective noise information stored in said storage means (see below for further explanation).

Sakai et al. disclose that once a user provides a release instruction, the camera control circuit (10) controls the lens (1), shutter (2), and solid-state image pickup element (3) to take a subject image. Data read from the solid-state image pickup element (3) is converted into digital data by the A/D converter (4) wherein the digital image data is stored in a memory (8).

Furthermore, Sakai et al. disclose that the process is repeated when the shutter (2) is closed wherein an output of the solid-state image pickup element (3) is A/D converted (4) and is downshifted to the lower digit by an arbitrary number of bits (set by the camera control circuit 10) and it inverted to an opposite sign. The resulting data is added (subtracted due to the sign inversion) to an output of the memory (8) and stored back into the memory (8). In other words, the output of the memory (8) is subtracted by the shifted data. The data captured while the

shutter is closed is noise data. The image data first stored in the memory (8) is subtracted by the average of noise data picked up a plurality of times therefore reducing fixed pattern noises without increased random noises.

Sakai et al. disclose that the accumulation time of the solid-state image pickup (3) can either be long or short and dependent upon the operation mode of the camera, as stated in columns 4 (lines 61 – 67) and 5 (lines 1 – 4). Thus, in Sakai et al. the accumulation times of the plurality of captured data required for noise correction is arbitrary and different and at least two accumulation times are present; the bare minimum required for an average.

In addition, the digital electronic camera of Sakai et al. is disclosed at the frame level. In other words, noise data captured in solid-state image pickup element (3) during a closed shutter is captured as a whole frame and, likewise, image data captured in the solid-state image pickup element (3) during an open shutter is captured as a whole frame. Thus, since the noise data is averaged among a plurality of noise frames and is subtracted from a frame of image data, Sakai et al. is applicable at the pixel level as required in the claim language.

However, Sakai et al. do not disclose a distance measurement calculation means for performing a distance measurement calculation in accordance with a signal corrected by said noise correction means. On the other hand, Kiri et al. also disclose a digital electronic camera including an image processing apparatus. As shown in figure 2, the image processing apparatus of Kiri et al. includes an automatic focusing apparatus (30) with a distance measurement calculation means (34) for performing a distance measurement calculation. As stated in column 1 (lines 66 and 67) and 2 (lines 1 – 3), at the time the invention was made, one with ordinary skill in the art would have been motivated to include the distance measurement calculation

means (34) for performing a distance measurement calculation, as taught by Kiri et al., in accordance with a signal corrected by the noise correction means, of Sakai et al., so as to "provide an object detection mechanism in an imaging device with automatic focusing wherein the mechanism is capable of reliably detecting an object to be focused with a simple structure." Therefore, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to include the distance measurement calculation means (34) for performing a distance measurement calculation, as taught by Kiri et al., in accordance with a signal corrected by the noise correction means, of Sakai et al.

28. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai et al. in view of Kiri et al. in further view of Meyers.

29. As for **Claim 12**, Sakai et al. in view of Kiri et al. disclose a photoelectric conversion unit including a plurality of pixels, a noise correction means for correcting noises in a signal output in accordance with noise information of the pixels, and a distance measurement calculation in accordance with a signal corrected by said noise correction means. However, Sakai et al. in view of Kiri et al. do not disclose wherein said photoelectric conversion unit has a plurality of area sensor units disposed on a two-dimensional plane, each area sensor unit including a plurality of pixels disposed two-dimensionally. On the other hand, Meyers also discloses a photoelectric conversion unit. As shown in figure 1A and 1B, Meyers disclose a photoelectric conversion unit (100) that has a plurality of area sensor units (22) disposed on a two-dimensional plane, each area sensor unit (22) including a plurality of pixels (24) disposed two-dimensionally. As stated in column 3 (lines 54 and 55), at the time the invention was made, one with ordinary skill in the art would have been motivated to include a photoelectric conversion unit that has a plurality of

area sensor units disposed on a two-dimensional plane, each area sensor unit including a plurality of pixels disposed two-dimensionally, as taught by Meyers, in the image processing apparatus, of Sakai et al. in view of Kiri et al., so as to provide a "large high resolution image sensor". Therefore, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to include a photoelectric conversion unit that has a plurality of area sensor units disposed on a two-dimensional plane, each area sensor unit including a plurality of pixels disposed two-dimensionally, as taught by Meyers, in the image processing apparatus, of Sakai et al. in view of Kiri et al.

Conclusion

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following is a brief description of a significant aspect of each cited prior art:

- **US 6,563,536 B1** – discloses an apparatus and method for reducing noise in an imaging system wherein a plurality of noise frames are averaged together to correct a plurality of video frames.
- **US 6,130,712** – discloses an apparatus and method for reducing noise in an image sensor wherein a plurality of dark pixels are averaged together to correct a plurality of bright pixels.
- **US 5,521,639** – discloses an apparatus and method for reducing noise in an image sensor wherein a plurality of dark pixels in an optical black region of the image sensor are used to correct a plurality of bright pixels in an optical light region.

- **US 4,839,729** – discloses an apparatus and method for reducing noise in an imaging system wherein a dark frame is captured and stored in an onboard memory and a light frame is stored in an onboard memory.
- **US 5,515,105** – discloses an apparatus and method for correcting an image in an image processing system wherein two reference images are captured to generate correction factors.
- **US 6,144,408** – discloses an apparatus and method for reducing noise in an imaging system wherein a single dark frame is used to correct a plurality of image frames.
- **US 6,473,124 B1** – discloses an apparatus and method for reducing noise in an imaging system wherein a dark frame is captured and stored in a memory for subtraction from the subsequent image frame.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 703.305.8090. The Examiner can normally be reached on Monday through Thursday from 7:30 AM to 5:30 PM and on alternating Fridays from 7:30 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Wendy R Garber can be reached on 703.305.4929. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9306.

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